ABSTRACT OF THE DISCLOSURE

A heat sink which comprises an enclosure having a highly thermally conductive surface region and defining an enclosed cavity. A porous, highly thermally conductive material is disposed in the cavity, preferably homogoneously therein, and is thermally coupled to the thermally conductive surface. A phase change material changing from its initial phase, generally solid, to its final phase, generally liquid, responsive to the absorption of heat is disposed in the enclosed cavity and in the porous material. In accordance with a first embodiment, the highly thermally conductive surface region is preferably aluminum and the porous medium is a highly thermally conductive porous medium, preferably aluminum. In accordance with a second embodiment, the thermally conductive surface is composed of highly thermally conductive fibers disposed in a matrix and the porous material is a plurality of the thermally conductive fibers extending from the thermally conductive surface into the cavity. The highly thermally conductive fibers are preferably graphite and the matrix is preferably an epoxy.